User Name Password Log in Help Register

Remember Me?

Home | Forum | Gallery | Garage | Groups | Links/Downloads | What's New?

Site News 60º V6 Family Tree CR Calculator Advanced Search

Home 60º V6 Family Tree

NOTHING BUT THE BEST AT...

Interested in Pontiac G8? Looking for a Pontiac G8? Then Check Out the Chevy Camaro. www.Chevrolet.com/Camaro

GM Supplier Discounts Exclusive GM Discounts for Suppliers. Learn More! www.GMSupplierDiscount.com

Chevy College Discounts Chevy Offers Discounts For Recent College Grads. See Offer Details. www.GMCollegeDisco AdChoices

Advance Auto Parts 20% Off Your Entire Order Today! No Minimum - Car and Auto Parts. AdvanceAutoParts.com/20-OFF-ALL

New Chevy Equinox Prices Don't pay MSRP of $23,530. Find our Lowest Price on a Chevy Equinox. ChevyEquinox.CarPriceSecrets

$30 Head Gasket Repair? DuraSeal® No Flush, Leave-in Sealer Easy Permanent Head Gasket Repair! seal-a-head.c AdChoices

If this is your first visit, be sure to check out the FAQ by clicking the link above. You may have to register before you can post: click the register link above to proceed. To start viewing messages, proceed to the Forums area and select the forum that you want to visit.

Menu

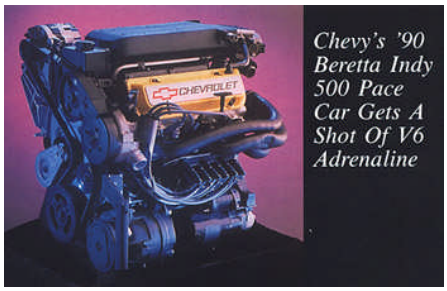
- **60º V6 Family Tree**
- 1980-1995 Iron Head
- 1987-1994 Aluminum Head MPFI
- 1993-Present Aluminum Head SFI
- 1991-1997 DOHC
- 2004-Present DOHC VVT
- 2006-Present Pushrod VVT
- Transmissions
- General Information
- Computers
- Myths
- CR Calculator

60º V6 FAMILY TREE

Launching in 1980 the Chevrolet 60-Degree V6 is a compact powerhouse. This innovative engine has beaten both the competition and the elements in off-road racing. It is a proven winner in sports car racing, and it has a promising future on America's oval tracks in the Midget classes. A Chevy V6/60-degree engine is the perfect power-plant for a high-tech street rod or an ultra light autocross machine. This engine has received changes almost every year of its life and is now one of GM's most widespread engines.

Chevrolets engine started its life as a true V6 from the ground up. It was designed with a 60 degree separation angle to give perfect balance and a crank throw angle of 120 degrees. This V6 is not like any other Chevrolet V6 which have all been derived form their V8 cousins. Chevrolet's 60-degree V6 has been produced in three distinct versions. First generation V6/60-degrees have cast iron cylinder heads with inline valves; second generation engines have aluminum cylinder heads with splayed valves. First generation engines V6/60-degrees are produced for front-wheel-drive and rear-wheel-drive vehicles exclusively. The second and third generation engines were only used in front-wheel-drive vehicles. Generation three engines were introduced in 1993. Generation three engines got a redesigned cylinder heads and intake with improved air flow. The crank case was still cast iron and received little change. Chevrolet would soon push this engine to its real potential.

In 1989 Chevrolet teamed up with McLaren to produce a turbocharged engine of the yet to be introduced 3.1L. This engine made 205 horsepower and 225 foot-pounds of torque. In the first year only 2000 were produced. It lasted through 1990 and was then stopped. In this same year the turbo engine was coming to a close, Chevrolet made a pace car out of the Beretta. This car of course had to be special and so did the engine. The traditional cast iron block was first tossed in favor of GM's high performance V6/60-degree aluminum bow tie block. With the block punched out to 3.4 liters, a compression ratio of 10.7:1 and filled with GM and aftermarket goodies, like a Crower solid lifter camshaft with .459-inch max intake lift and .484-inch exhaust lift, Iskenderian solid lifters, custom-made Smith Brothers pushrods, Crane aluminum roller rocker arms, special studs from Ryan Falconer Racing Engines, the engine produced 225 horsepower. With this power the car was projected to 60 miles per hour in 6.5 seconds and was able to cover a quarter mile in 14.5 seconds. Still Chevrolet could not get enough of the little engine that could, it was time for some innovation, all engines thus far have been pushrod engines but Chevrolet was not done with their little creation.



In 1991 Chevrolet introduced a Dual Over Head Cam (DOHC) version of the V6/60-degree engine. The engine produced an astounding 210 horsepower and 215 foot-pounds of torque. In 1991 these were very impressive numbers. Rumors around this engine suggest it actually produced 300 horsepower when first designed but there was no transmission available at the time to reliably handle the power. Plus torque steer inherent with front-wheel-drive cars of the day would be unbearable for the average driver, if 300 horsepower were delivered to the front wheels. The engine lasted through until 1998 when it was ended. A DOHC engine would not be seen again until 2004.

In 2004 GM once again was re-facing its image. Starting with a fresh new Cadillac, called the CTS. This special car needed a special engine. Introduced, was the 3.6L DOHC Global V6. This engine also incorporated Variable Valve Timing (VVT) which provides a very flat torque curve while also improving emissions. Almost every power train advancement is in this astounding engine and with this technology 260 horsepower is produced.

Year	FWD Pushrod Motor
1980	• Introduced as a 2.8L (173 cubic inches) 60° V-6. • 60° cylinder angle in block for size reduction and complete balance. 120 degree crank throw angle • Was designed for future displacement increases • Firing order is 1-2-3-4-5-6 • 89mm Bore, 76mm Stroke • 2.494in/63.35mm main journals • Cast Iron, Small Valve Heads (1.60 intake, 1.30 exhaust) • Flat-top aluminum cast pistons • Heads have approx 50cc combustion chamber • Fuel pump pushrod 12mm in diameter • HEI ignition

	system • 2-barrel Rochester Varajet II carburetor • Externally balanced cast crankshaft • Horsepower 110 • Torque 148 • Compression Ratio 8.5:1	
1981	• Water Pump/Timing Cover changed to accommodate not having to remove timing cover seal when removing water pump. • Guide mounted seal added to intake valve guide • Early Fuel Evaporation grid added underneath carburetor • HO version introduced (HP increase to 135, piston height increased, compression increased to 9.0:1, Intake and exhaust valve diameters increased, cross-drilled crankshaft main journals) in limited cars	**RWD Pushrod Motor**
1982	• Basic carry-over from 1981 • Fuel pump pushrod diameter increased to 16mm in all models • Rope-type rear main seal replaced by two-piece polymer seal	First year for the rear wheel drive application. Use in F-bodies and S-10's. All models were carbureted like FWD motors. Blocks were different castings than FWD motors the starter motor is now on the odd numbered cylinder bank and the engine mounts are centered on the sides of the block • HEI distributor with separate coil • Front mounted thermostat housing • EGR valve located at rear of engines intake manifold • Engine-driven cooling fan • Vee belt for accessory drive • Horsepower 110 • Torque 148 • Compression Ratio 8.5:1
1983	• Four bolt right hand motor mount	• No changes
1983	• No changes	• No changes
1984	• No changes	• No changes
1985	• Switch-over year to larger main journal blocks mid-year main journals now measure 2.648in/67.25mm • All fuel injected engines received	• Switch-over year to larger main journal blocks mid-year main journals now measure 2.648in/67.25mm. Some S-Series vehicles still used

	larger valves (1.72 intake, 1.42 exhaust) • Engine introduced in J-cars. Thin front timing cover, offset water pump, and narrower timing set used in models with engine set further forward (i.e. Cavalier, Cimmaron, etc.) • Multiport Fuel Injection (MPFI) system was introduced, which included: one fuel injector per cylinder which sprays fuel directly into cylinder, cold start fuel injectors, special throttle body, high-pressure electric fuel pump, fuel pressure regulator. • OBD I computer system • Different cylinder head gaskets and pistons used with MPFI engines • Mechanical fuel pump is replaced with an electronic in tank pump on fuel injected vehicles • One-piece rear main seal introduced (10mm wide) mid-year • O-ring used to seal main oil passage between oil pump and block • Distributor downsized • Serpentine accessory drive belt on some models. • Lower friction oil control rings • Intake manifold plenum lowered in J-cars to clear hood • Horsepower 120 • Torque 155 • Horsepower 135 (Fiero only) • Torque 165 (Fiero only) • Compression 8.9:1	small main journals and 2 piece rear main seals. All EFI engines like in the Camaro were large journal crankshafts with one piece rear seal. • Multiport Fuel Injection (MPFI) system was introduced, which included: one fuel injector per cylinder which sprays fuel directly into cylinder, cold start fuel injectors, special throttle body, high-pressure electric fuel pump, fuel pressure regulator. Available in F-bodies and P-Bodies. • MPFI engines received larger valves (1.72 intake, 1.42 exhaust) • Separate coil and distributor • MPFI engine received Electric cooling fans • OBD I Computer system • Lower friction oil control rings • F-bodies used a combination vee belt serpentine belt accessory drive • S-10's meeting California emissions standards used electronic feedback carburetors (Rochester Varajet E2SE) which used a simple ECM to control mixture and ignition timing. Torque converter lockup was now controlled by electronic lockup solenoid on these models • Horsepower 135 (MPFI only) • Torque 160 (MPFI only) • Compression 8.9:1 (MPFI only)
1986	• No changes	• Introduction of TBI (Throttle Body Injection) on S-10's only, which consisted of a 2 bore throttle body perched atop the engine much like a carburetor. One injector above each bore delivered fuel. Each bore measured 1-3/8"

		• OBD I computer system introduced with TBI models • Mechanical fuel pump is replaced with an electronic in tank pump • Engines use a fully electronic ignition • All engines now used large valve heads • Engines on S-10's used a combination vee belt and serpentine setup. Water pump was still standard direction • F-bodies now used a full serpentine belt system with reverse rotation water pump. • Horsepower 125 (TBI only) • Torque 150 (TBI only) • Compression Ratio 8.9:1
1987	• First Gen FWD motor ends production. FWD Aluminum Head Generation II Engine Begins Production • Cylinder heads redesigned, changed to cast aluminum instead of iron • Cylinder heads use 28cc heart shaped (fast burn) combustion chamber requiring the use of 28cc dished pistons and different head gaskets • Cylinder heads designed with splayed intake and exhaust valves • Cast aluminum valve covers • Guide mounted oil seals used on both intake and exhaust valves • Discontinued use of valve stem seal, oil shedder, and shield • Valve lash adjustment procedure changed • Intake plenum, front timing cover, and water pump housing redesigned • Distributorless Ignition System (DIS) replaced distributor • Internally balanced crankshaft incorporates "reluctor" wheel for distributorless ignition system • Compression ratio 8.9:1	• Full serpentine belt system • Timing cover and oil pan receive changes. There are no longer oil pan bolts in the timing cover. Oil pan gasket is one piece rubber. • Water pump is now reverse rotation due to the serpentine belt system. • Internally balanced crankshaft introduced. Cranks are all cast with reluctor wheel but the system is not used for spark delivery. Some engine still remain with external balance. Hit or miss across all RWD models

	• Lower friction piston compression rings used • Serpentine accessory drive belt • One-piece oil pan gasket • Horsepower 130 • Torque 160 • Compression Ratio 8.9:1		
1988	• Multec fuel injectors replace earlier pintle-style injectors • Used lathe-turned pistons • Piston weight reduced from 600gm to 540gm, and then finally to 510 • Speed density engine control system replaces mass-air flow sensor in J-cars • Horsepower: 140 (Fiero) • Torque: 165 (Fiero)	• Multec fuel injectors replace earlier pintle-style injectors (MPFI only) • Internally balanced crankshaft on all engines, flywheel no longer has balancing weight • Crank cast with DIS reluctor wheel but DIS not used • Used lathe-turned pistons • Piston weight reduced from 600gm to 540gm, and then finally to 510	
1989	• 3.1L introduced, stroke increased by 8mm, piston height decreased by 4mm approx 26cc dished pistons used • Used MPFI injection • Fully electronic EGR • Pontiac sold a limited-edition version of the Grand Prix with a McLaren turbocharged 3.1L engine. Only 2000 were made. This engine is designated as LG5 (VIN code V) • Horsepower 140 (3.1L VIN T only) • Torque 180 (3.1L VIN T only) • Horsepower 205 (Turbo only VIN V) • Torque 225 (Turbo only VIN V) • Compression ratio 8.8:1 (Vin T and V)	• No changes	
1990	• Turbo variant became a regular production option on Pontiac Grand Prix • During this year Chevy released the Lumina APV Minivan It used a 3.1L FWD block and timing cover with offset water pump, but a RWD head and intake combination and was Throttle Body Injected	• 3.1L introduced, in F-bodies only stroke increased by 8mm. Piston height decreased by 4mm approx 12cc dished pistons used • Used MPFI injection • Used Separate coil and distributor • Horsepower 140 (3.1L only) • Torque 180 (3.1L only) • Isuzu trucks	**DOHC FWD Engine**

	similar to the S-10's.	used a 3.1L TBI version. The starter of this motor was on the drivers side which is opposite of a normal RWD motor.	
1991	• Turbo engine ends production	• No changes	• 3.4L Displacement • Completely new aluminum cylinder heads use 2 camshafts per head and 4 valves per cylinder • Chain driven intermediate shaft which drove the oil pump. Belts from the intermediate shaft drove the camshafts. • Special block with modified oiling system and no traditional cam section or lifter gallies • Engine oil cooler was used • MPFI fuel injection • OBD I computer system • Horsepower 210 (manual trans) • Horsepower 200 (auto trans) • Torque 215 (auto & manual trans) • Compression ratio 9.25:1 (auto tans) • Compression 9.5:1 (manual trans)
1992	• No changes	• No changes	• No changes
1993	• Generation 3 Begins mid year in Oldsmobile Cutlass Supreme • Engine introduced as 3100 engine (3.1L) in a few cars. • 3100 still used OBD I computer system • Roller lifter valvetrain • SFI injection • MAF system used for fuel calculations • Cylinder heads have D shaped exhaust port • Engines used plastic valve	• 3.4L pushrod version introduced in F-Bodies • Bore increased to 92mm • Approx 7cc dish in pistons • SFI (Sequential Fuel Injection) system introduced • Cam position sensor used for SFI • Still flat tappet camshaft • OBD I computer • DIS system introduced • Cylinder block upgrade • Horsepower 160 (3.4L only) • Torque 180	• No changes

	covers • Cross bolted powder metal main caps • Windage tray below crankshaft • Oil pan is now cast aluminum • Camshaft uses cam position sensor for fuel injection • Cam position sensor sync ring uses "missing tooth" design • Camshaft is hollow core with pressed on lobes. • Horsepower 175 (varies slightly between models) • Torque 195 (varies slightly between models) • Compression ratio 9.6:1	(3.4L only)	
1994	• No changes	• No Changes • 2.8L is no longer in the S-10 • 3.1L is no Longer in the Isuzu Trooper	• MAF system introduced for fuel management • Manual transmission was discontinued • Engine oil cooler was dropped • SFI fuel injection introduced
1995	• Generation 2 engine ends production in all cars. • Some 3100 engines had self aligning rocker arms • Plastic valve covers replaced with aluminum	• No changes	• No changes
1996	• Lumina APV Minivan ends production along with the 3.1L FWD iron head motor • 3400 introduced in some models with an increased intake valve (1.76") and D shaped exhaust port for increase flow. • OBD II computer system introduced • Full roller valve train introduced with roller fulcrum rockers and non adjustable preload • Self aligning rocker arms • Horsepower 185 (3400 only, varies slightly between models) • Torque 205 (3400 only, varies slightly between models) • Compression ratio 9.6:1 (all	• RWD engine ends production in all vehicles	• Compression increase to 9.7:1. • Different camshaft profile • Different head design • Different Intake manifold design • Different Exhaust Manifolds • OBD II computer system introduced

	motors)			
1997	• No changes		• No changes	
1998	• No changes		• 3.4L DOHC engine ends production	
1999	• No changes	• Gm Performance Parts division releases the 3.4L HT crate engine. Designed to replace tired 2.8L engines in S-10 trucks. Engine features larger oil pump, better cam design, stiffer springs, revised retainers and increased displacement over the 2.8L • Horsepower 160 • Torque 194		
2000	• All engines now use the same 1.76" intake valves • Valve guides increase in size • Cam sync ring is now "single tooth design"	• No changes		
2001	• Intake Valley Baffle • Modified Lifter Guide • More Durable Water Pump • Improved Bearings for Accessory Drive Belt Tensioner and Idler • High-Resistance Spark Plugs and Wires • Revised Throttle Body New Starter Motor • Sleeveless Coolant sensor • On-Road Vapor Recovery (ORVR) System for Montana and Aztek • Specific Oil Pan for Montana and Aztek • Revised Powertrain Control Module (PCM) for Aztek	• No changes		
2002	• No changes	• No changes		
2003	• Revised Crankshaft Bearing • Revised Cylinder Heads • Revised Pushrods • Revised Camshaft Journal • Improved Water Pump • Iridium Spark Plugs • Maximum Oil Change Interval Extended • Improved Starter Solenoid • Some models	• No changes	**DOHC Global FWD Engine**	**DOHC Global RWD Engine**

	have no AIR • Cam sync ring is a 50/50 pattern of raised and lowered semi circles			
2004	• 3500 introduced in the Malibu 94mm bore, 84mm stroke • Graphite Head Gaskets • Improved Water Pump • Improved Sealing • Improved Flywheel • 3100 and 3400 receive changes for common assembly with 3500 High Value V-6 • 3400's saw improved cam bearings, improved starter for minivans and sport-utility vehicles, more efficient catalytic converter and improved bearings • Horsepower 200 (3500 only) • Torque 220 (3500 only) • Compression ratio 9.8:1 (3500 only)	• No changes	• 3.6L Displacement • Completely new design introduced in Buick Rendezvous Mounted transversely (like a FWD engine) yet powering an AWD drive train. • Aluminum engine block & Cylinder Heads • Four Cam Phasing • Full chain drive valvetrain system • Aluminum Pistons With Floating Wrist Pins & Oil-Jet Capability • Forged Steel Crankshaft • Sinter-Forged Connecting Rods • Structural Aluminum Oil Pan with Steel Baffles different from RWD version • Dual-Stage Variable Aluminum Intake Manifold • Advanced Sequential Port Fuel Injection • Electronic Throttle Control with Integrated Cruise Control • Coil on Plug Ignition • Engine-Mounted Micro-Hybrid Engine Control Module • Optimized Exhaust Manifolds with Closed-Coupled Catalytic Converters • Fully Isolated Composite Camshaft Covers • Outstanding Noise, Vibration and Harshness Control • Horsepower	• 3.6L Displacement • Completely new design introduced in Cadillac's • RWD in CTS • RWD or AWD in SRX • Aluminum Engine Block & Cylinder Heads • Four Cam Phasing • Full chain drive valvetrain system • Aluminum Pistons With Floating Wrist Pins & Oil-Jet Capability • Forged Steel Crankshaft • Sinter-Forged Connecting Rods • Structural Aluminum Oil Pan with Steel Baffles different from FWD version • Dual-Stage Variable Aluminum Intake Manifold • Advanced Sequential Port Fuel Injection • Electronic Throttle Control with Integrated Cruise Control • Coil on Plug Ignition • Engine-Mounted Micro-Hybrid Engine Control Module • Optimized Exhaust Manifolds with Closed-Coupled Catalytic Converters • Fully Isolated Composite Camshaft Covers • Outstanding Noise, Vibration and Harshness Control • Horsepower 255 (Cadillac CTS only) • Horsepower 260 (Cadillac

			245 • Torque 235 • Compression 10.2:1	SRX only) • Torque 252 • Compression 10.2:1
2005	• Long relief A500 upper and lower thrust bearing (3100 only) • Exhaust manifold and gaskets (3100 only) • Revised throttle body gasket material (3100 only) • Modified fuel rail assembly to implement the "shrouded tip" Multec 2 Injectors (3100 only) • 7.5 watt, post-converter oxygen sensor (3100 only) • New application in 2005 Chevrolet Equinox (3400 only) • 24-X encoded crankshaft (3400 Equinox only) • Specific oil pan and improved oil pan gasket material (3400 Equinox only) • New intake manifold and improved intake manifold gasket (3400 Equinox only) • New engine cover (3400 Equinox only) • Electronic throttle control (3400 Equinox only) • Returnless fuel rail and pipe assembly (3400 Equinox only) • Neutral torque axis engine mount (3400 Equinox only) • Air gap exhaust crossover (3400 Equinox only) • P05 controller (3400 Equinox only) • Expanded applications (3500 only) • Large pin iron crankshaft (for Chevrolet Uplander, Saturn Relay, Pontiac Montana SV6) (3500 only) • Improved throttle body (3500 only) • PTFE crankshaft seals • Modified fuel rail assembly to implement the "shrouded tip" Multec 2 Injectors (3500 only) • Acoustic cover	• No changes	• Silent chain primary drive • Damped front engine cover • Polymer coated piston skirts	• New 2.8L variant for Cadillac CTS • Reduce compression for 2.8L (10:1) to run on regular gasoline • Two new applications • Silent chain primary drive • Damped front engine cover • Polymer coated piston skirts • Horsepower 210 (2.8L CTS only) • Torque 195 (2.8L CTS only)

	for Malibu and G6 applications (3500 only)			

Written By: Geoff Moore (betterthanyou)

Information Provided By*: dykz34, GPXSS, bszopi, korbendallas68, SappySE107, patgizz, RidgeRunner, v6h.o., Cliff8928, Ed Mc, DubTee1480, Juglenaut, quaddriver

-- #107 Contact Us Archive Top

All times are GMT -4. The time now is 12:58 AM.

Powered by vBulletin® Version 4.1.10
Copyright © 2012 vBulletin Solutions, Inc. All rights reserved.

Donation System provided by vBDonate (Pro) v1.0.0 (BETA 0) - vBulletin Mods & Addons. Copyright © 2012 DragonByte Technologies Ltd.
Easy Article Management provided by Easy Article Management v1.0.0 - vBulletin Mods & Addons. Copyright © 2012 DragonByte Technologies Ltd.
© 2000-2012, 60DegreeV6.com
Sphinx-based search by Digital Point

Page Time: **0.21150** seconds Memory: **12,477** KB Queries: **61** Templates: **33**
Server Uptime: **59 days 14 hours 55 mins** Server Load: **0.33** : 0.22 : 0.19